

**BI-VENTRICULAR PACING SYSTEM
MEASURING QRS DURATION**

FIELD OF THE INVENTION

- 5 Bi-Ventricular or AV synchronous cardiac pacing systems that pace and sense in at least one atrial heart chamber and deliver ventricular pacing pulses to right ventricular (RV) and left ventricular (LV) sites separated by a V-V delay for treatment of heart failure are disclosed that optimize one or more of the AV delay and V-V delay to enhance left ventricular filling and cardiac output as a function of QRS duration.
- 10 A system and method for monitoring the QRS duration, processing such signals to provide data from which the onset or progression of heart failure is determined, and adjusting synchronous pacing delay parameters including SAV delay and/or PAV delay and/or V-V delay to enhance cardiac output as a function of QRS duration is provided. The SAV, PAV, and/or the V-V delays can be varied from the prevailing delays as a function of measured QRS
- 15 duration so as to minimize the width of the QRS complex.

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